California Environmental Protection Agency

Air Resources Board

ARB Approved

Installation, Operation and Maintenance Manual

For Standing Loss Control Vapor Recovery System for Existing Installations of Aboveground Storage Tanks As Certified by Executive Order VR-301-A

April 2, 2009

NOTICE:

The **ARB Approved Installation, Operation and Maintenance Manual for the Standing Loss Control Vapor Recovery System for Existing Installations of Aboveground Storage Tanks** (AST) describes the tools and methods required to install the Standing Loss Control Enhanced Vapor Reduction (EVR) System.

The paint manufacturers written instructions, procedures and guidelines will be adhered to when preparing and applying white paint to existing ASTs or the warranty will be void. It is the owner's (of the AST) responsibility to ensure that the Standing Loss Control EVR System is properly and safely installed, operated and maintained on their existing ASTs. The owner may also choose to hire any qualified contractor or technician to install, operate and maintain the Standing Loss Control EVR System on their ASTs. All the current requirements of state, federal and local codes for installation and repair of gasoline dispensing equipment must be adhered to. Installation, operation and maintenance of the Standing Loss Control EVR System must also meet all the necessary safety precautions and site safety requirements to assure a safe and trouble free installation.

A list of recommended qualified technicians/contractors can be located by contacting the manufacturer of the Standing Loss Control EVR System. The following is a list of manufacturers and their contact information:

PPG High Performance Coatings
4635 N. Cedar Avenue
Fresno, California 93726-1002
Phone: (559) 222-3131

PPC Ponderosa Protective Coatings
3663 N. Clovis Avenue
Fresno, California 93727
Phone: (559) 291-0664

ICI Paints
6679 N. Blackstone
Fresno, California 93710
Phone: (559) 439-6200

Husky Corporation
2325 Husky Way
Pacific, Missouri 63069
Phone: (800) 325-3558

Modern Custom Fabrication
SuperVault Protected AST
2421 E. California Avenue
Fresno, California 93721
Phone: (800) 800-8268

Steel Tank Institute
Fireguard Protected AST
944 Donata Court
Lake Zurich, Illinois 60047
Phone: (847) 438-8265
Manufacturers of Fireguard Protected ASTs can be found at:
http://www.steeltank.com/FindaFabricator/tabid/55/Default.aspx

Standing Loss Control Vapor Recovery System
Installation, Operation and Maintenance Manual for Existing Installations of Aboveground Storage Tanks

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Summary of Maintenance Required of the Standing Loss Control Vapor Recovery System

Component	Interval	Maintenance To Be Performed
Pressure/Vacuum Vent Valve Husky 5885	Annual	**1.** Remove screws that hold on the top cover. Do not remove the screens. **2.** Remove any debris from inside the lower cover **3.** Check the drain holes in the lower cover. **4.** Reinstall the top cover **5.** Tighten the screws firmly
White Paint PPG High Performance Coatings Ponderosa Paint Company ICI Devoe Devthane	Annual	**1.** Wash the surface of the aboveground storage tank with soap solution and rinse with water **2.** Visually inspect painted surface for signs of wear including but not limited to discoloration, peeling, chipping, thinning, or other areas where paint is not adhering to the aboveground storage tank surface. **3.** If signs of wear are observed, prepare surface of aboveground storage tank and re-apply white paint per the manufacturer's specifications
Modern Custom Fabrication SuperVault MH Series Aboveground Storage Tanks	Weekly	**1.** Check the operation of the emergency vents for free movement and no obstructions **2.** Spill pan should be clean and free of obstructions **3.** Check tank monitoring device if equipped **4.** Inspect surface (paint) of tank for chips or corrosion
Steel Tank Institute Fireguard Protected Aboveground Storage Tanks	Periodically Monthly	**1.** Inspect proper drainage around the AST area **2.** Inspect the tank exterior to ensure the integrity of the coating **1.** Inspect for the presence of water at the lowest possible points inside the primary tank

(End of maintenance table.)

[1] These maintenance requirements shall not circumvent use of the manufacturer's installation and maintenance instructions. Maintenance contractors or owner/operators shall refer to the manufacturers complete installation and maintenance instructions found herein to ensure that all maintenance requirements are met. Maintenance must be conducted within the interval specified from the date of installation and at least within the specified interval thereafter.

Standing Loss Control EVR Installation Equipment Check List
Installing Products per ARB Executive Order VR-301-A

Site Location:*(name)* _____
Address: _____
City/State: _____
Contact/Phone: _____
Installing Contractor:(name) _____
Address: _____
City/State: _____
Contact/Phone: _____
Tank Number:_____ Product:_____Capacity:_____
Tank Number:_____ Product:_____Capacity:_____
Tank Number:_____ Product _____Capacity:_____
Installing Technician: *(name)*: _____
Technician Certification Number: _____
Signature: _____

Yes/No	Initials

1. Is all of the installed equipment for Standing Loss Control EVR listed in ARB Executive Order (E.O.) VR-301-A?

Note: All Standing Loss Control Vapor Recovery installed equipment must be listed in E.O. VR-301-A. See attached Exhibit 1 Checklist, and /check each item installed.

Yes/No	Initials

2. Pressure Vacuum Vent Valve – Is there a P/V Vent valve installed on the top of each (gasoline) vent pipe (a maximum of three EVR P/V valves per GDF) or manifold?

a. P/V vent valve(s) torqued to _____ ft. lbs.

Yes/No	Initials

3. White Paint – Has the aboveground storage tank surface been prepared according to the white paint manufacturer's specifications?

a. Describe surface preparation: _____
_____
_____

Yes/No	Initials

4. White Paint – Has a certified white paint been applied to the surface of the aboveground storage tank according to the manufacturer's specifications?

a. Describe the application technique: _____
_____

Yes/No	Initials

5. Modern Custom Fabrication SuperVault MH Series – Has the SuperVault AST been installed with the proper pressure/vacuum vent valve ?

a. Describe any issues:_____
_____

Yes/No	Initials

6. Steel Tank Institute Fireguard Protected AST – Has the Fireguard AST been installed with the proper pressure/vacuum vent valve?

a. Describe any issues:_____
_____

Standing Loss Control Vapor Recovery System Exhibit 1 Equipment Checklist

From the list below, check the box for each component you used:

Pressure/Vacuum Vent Valve	€ Husky 5885
White Paint	€ PPG High Performance Coatings, Durethane € Ponderosa Paint Company, Enviro-Clad € ICI Devoe High Performance Coatings, Devthane
Protected Aboveground Storage Tanks	€ Modern Custom Fabrication SuperVault MH Series € Steel Tank Institute Fireguard Protected AST

Figure A-1
Husky Model 5885 2-Inch Threaded Pressure/Vacuum Vent Valve

MODEL #5885
Recommended Installation, Maintenance and Inspection Instructions

EVR Pressure Vacuum Vent

5885

WARNING Designed for use at motor fuel dispensing facilities only.

INSTALLATION INSTRUCTIONS

NOTE: Always adhere to installation / usage instructions and warnings. Improper use may result in injury, damage or hazardous spill.

1. Remove the vent from the carton and visually inspect for any shipping damage.
2. Apply fuel resistant pipe sealant to the threads on the 2" vent stack.
3. Screw the Pressure Vacuum (P/V) vent onto the vent stack and tighten to a range of 20 to 50 ft-lbs with a suitable wrench.
4. DO NOT OVERTIGHTEN

TESTING / MAINTENANCE / INSPECTION

Testing Criteria Per TP201.1E and Exhibit 3 of applicable Phase 1 E.O.

Leak rate: Pressure = .05 CFH @ 2" wc, Vacuum = .21 CFH @ -4" wc.
Cracking Pressure = 2 1/2" to 6" wc, Vacuum = -6" to -10" wc.

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Annually Inspect the P/V vent valve for foreign objects:

1. Remove the screws that hold on the top cover. Do not remove the screens.
2. Remove any debris from inside the lower cover.
3. Check the drain holes in the lower cover.
4. Reinstall the top cover.
5. Tighten the screws firmly.

- All drive aways, maintenance and inspection activities must be logged using the serial number of the individual product.
- Apply city, state, or federal testing regulations as appropriate.

ANY TEST / INSPECTION FAILURE REQUIRES IMMEDIATE EQUIPMENT REPLACEMENT OR REMOVAL FROM SERVICE.

MADE IN THE USA

Husky Corporation • 2325 Husky Way • Pacific, MO 63069 • Phone: (800) 325-3558 • Fax: (636) 825-7300 • www.husky.com

Figure A-1 (continued)
Husky Model 5885 2-Inch Threaded Pressure/Vacuum Vent Valve

ALWAYS ADHERE TO INSTALLATION / USAGE INSTRUCTIONS AND WARNINGS.
Improper use may result in injury, damage, or hazardous spill.

GENERAL WARNINGS / INSTRUCTIONS

- Use of equipment is at individuals' own risk.
- Always abide and adhere to city, state, and federal regulations regarding use and installation of dispensing equipment.
- Always follow the dispenser manufacturer's instructions.
- Always turn off all power to dispenser during maintenance and inspection activities.
- Always close the shear valves during maintenance and inspection activities.
- Always relieve pressure from system prior to performing maintenance activities.
- Always check continuity after installation using a megohmeter (Refer to PEI RP 400 for details).
- Always replace or remove from service damaged or leaking dispensing equipment immediately.
- Always report leaks / spills / accidents to appropriate authorities.
- Always wear appropriate safety equipment during maintenance activities.
- Always have appropriate fire extinguishing equipment within 5 feet of dispensers.
- Always use pipe sealant approved for gasoline service.
- Always place containers on the ground before filling.
- Always discharge static electricity before using or servicing equipment by touching a metal part of the dispenser before and after fueling vehicle.
- Never smoke within 20 feet of dispensers.
- Never keep in service past recommended life.
- Never leave the nozzle unattended while dispensing fuel.
- Never use sparking or flaming devices within 20 feet of dispensers.
- Never use power tools near dispensers or to aid in the installation process.
- Never use cell phone within 20 feet of dispensers.
- Never reenter car when fueling vehicle.
- Never allow gasoline to touch eyes or skin.
- Never use at flow rates in excess of regulatory guidelines.
- Never use at flow rates less than 5 gallons per minute.
- Never dispense flammable material into unapproved containers.
- Never dispense fuel without a valid driver's license.

CAUTION: DO NOT ALTER OR COVER
THE P/V VENT

Figure A-1 (continued)
Husky Model 5885 2-Inch Threaded Pressure/Vacuum Vent Valve

TROUBLESHOOTING GUIDE

Pressure Decay Test Failure...	1. Test vent to CARB TP201.1E. 2. Replace vent.

For stations with ISD monitoring

Vapor leak...	1. Verify other equipment is not the cause. 2. Test vent to CARB TP201.1E 3. Replace vent.
Exceeds allowable system cracking pressure...	1. Replace vent

GENERAL TECHNICAL DATA

Fuel Type	Test and warranty for gasoline and diesel fuel
Body	Sand cast aluminum
Screens	Stainless Steel 40 mesh
Seal	Nitrile Foam
Covers	Aluminum
Weight	1.2 lbs
Threads	2" NPT
Case Quantity	20
Listings	CARB UL
Patents	5,957,157

ACCESSORIES

Part #5041
3" to 2" Threaded Adaptor

Installation Procedure:
1. Visually inspect the o-ring and threads for chips, dirt & debris.
2. Apply fuel resistant pipe sealant to the 3" NPT threads of the vent pipe.
3. Screw the P/V vent adaptor onto the vent stack by hand.
4. Apply fuel resistant pipe sealant to the 2" NPT threads of the P/V vent adaptor.
5. Screw the P/V vent onto the adaptor and tighten to a range of 20 to 50 ft-lbs. with a suitable wrench. Do not overtighten.

Part #5426
Test Adaptor

NOTE: This adaptor is designed to fit on the inlet of the P/V Vent to allow for field and lab tests.

Installation Procedure:
1. Screw P/V Vent adaptor into the P/V Vent valve until hand tight. Make sure the seal is compressed.
2. Place the P/V Vent valve and adaptor on a flat surface.
3. Attach a 3/16" hose (Tygon fuel tubing) from test apparatus to hose barb on the side of the adaptor.
4. After testing, remove hose from barb and remove adaptor from vent.

Figure B-1
PPG High Performance Coatings Durethane DTM Urethane Mastic

DURETHANE® DTM 95-3300 Series

HPC/Industrial Maintenance

DURETHANE® DTM Urethane Mastic

GENERAL DESCRIPTION

DURETHANE® DTM is a surface tolerant, high solids, high build, two component acrylic urethane formulated for direct-to-metal applications. This product is compliant for applications in areas with VOC requirements of less than 250 g/L (2.08 lbs./gal.).

RECOMMENDED USES

Aluminum
Ferrous Metal
Galvanized Steel
Masonry, Concrete Stucco, Plaster

FEATURES AND BENEFITS

Direct-to-Metal Application, including tightly adhering rust
Low VOC
Superior gloss and color retention
Easy to mix and apply by air or airless spray, brush or roller
Excellent UV stability
Infinite color capability
Surpasses Level 3 of SSPC-36 paint specification
Can earn LEED NC Version 2.2. Credits

PACKAGING

Comp A (95-3300 and 95-3301) are available in 1-Gallon (3.78L) and 5-Gallon (18.9 L) containers.

Comp B (95-339) is available in 1 Quart (946 mL) and 1-Gallon (3.78L) containers.

Not all containers are full-filled.

TINTING AND BASE INFORMATION

95-3300	Neutral Base up to 18 fl. oz.
95-3301	White Base up to 8.0 fl. oz.
95-339	Component B (do not tint)

Use formulas from the DURETHANE® DTM section of the formula book. Use only PERFORMACOLOR® 4257 line colorants.

PRODUCT DATA

GLOSS:	85 minimum (60° meter)
VOC:	2.01 lbs./gal. (241 g/L)
COVERAGE:	261 sq. ft./gal. @ 4 mils (24.2 sq. m/3.78L)

Note: Coverage does not include loss due to varying application method, surface profile or mixing.

DFT:	3.0 minimum to 5.0 maximum mils
WEIGHT/GALLON*:	11.3 lbs. +/- 0.3 lbs. (136 g)
VOLUME SOLIDS*:	65.2% +/-2%
WEIGHT SOLIDS*:	74.3% +/-2%
FILM THICKNESS:	
Dry Mils*:	3.0 to 5.0
Dry Microns:	76.2 to 127
Wet Mils*:	4.6 to 7.7
Wet Microns:	116.8 to 195.6
MIX RATIO:	5 parts Comp. A to 1 part Comp. B

Results will vary by color, thinning and other additives.

*Product data calculated on mixed product 95-3301 mixed with 95-339.

POT LIFE:	3 hours @ 77°F (25°C)
INDUCTION TIME:	None
CLEAN UP:	97-727, 97-730, 97-735
FLASH POINT:	95-3300/3301 86°F (30°C)
	95-339: 331°F (166°C)

DRYING SCHEDULE

Per ASTM D5895, air dry @ 50% relative humidity.
Drying times listed may vary depending on temperature, humidity, color and air movement.

With 97-722 Accelerator

	90°F (32°C)	77°F (25°C)	40°F (4.4°C)
Dry to Touch:	<1 hour	<1 hour	1 hour
Dry Through:	<1 hour	<1 hour	4 hours
Dry to Recoat:	When dry through	When dry through	When dry through

Without 97-722 Accelerator

	90°F (32°C)	77°F (25°C)	40°F (4.4°C)
Dry to Touch:	1 hour	2 hours	4 hours
Dry Through:	8 hours	8.5 hours	>24 hours
Dry to Recoat:	When dry through	When dry through	When dry through

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Figure B-1 (continued)
PPG High Performance Coatings Durethane DTM Urethane Mastic

DURETHANE® DTM — **95-3300 Series**

DURETHANE® DTM Urethane Mastic — HPC/Industrial Maintenance

GENERAL SURFACE PREPARATION

The service life of the coating is directly related to the surface preparation. The surface to be coated must be dimensionally stable, properly prepared, dry, clean and free of contamination. SSPC-SP2 Hand Tool or SSPC-SP3 Power Tool Cleaning is minimum. For best performance, SSPC-SP6 (NACE #3) Commercial Blast Cleaning is recommended. WARNING! If you scrape, sand, or remove old paint, you may release lead dust or fumes. LEAD IS TOXIC. EXPOSURE TO LEAD DUST OR FUMES CAN CAUSE SERIOUS ILLNESS, SUCH AS BRAIN DAMAGE, ESPECIALLY IN CHILDREN. PREGNANT WOMEN SHOULD ALSO AVOID EXPOSURE. Wear a properly fitted NIOSH-approved respirator and prevent skin contact to control lead exposure. Clean up carefully with a HEPA vacuum and a wet mop. Before you start, find out how to protect yourself and your family by contacting the USEPA National Lead Information Hotline at 1-800-424-LEAD or log on to www.epa.gov/lead. In Canada contact a regional Health Canada office. Follow these instructions to control exposure to other hazardous substances that may be released during surface preparation.

PREVIOUSLY PAINTED SURFACES: Old coatings should be tested for adhesion of the existing system and lifting by the proposed topcoat.

RECOMMENDED PRIMERS

DURETHANE® DTM Mastic is self-priming. Aggressive environmental conditions or heavily rusted substrates require the use of a primer.

94-109	Epoxy Fast Dry Primer
97-946	All Weather DTR
97-145	PITT-GUARD® DTR
98-46	AQUAPON® WB

LIMITATIONS OF USE

Apply only when air, product and surface temperatures are at least 40°F (4°C) and surface temperature is at least 5°F (3°C) above the dew point. Drying times listed may vary depending on temperature, humidity and air movement. Do not apply material which has been mixed for more than three hours as loss of gloss uniformity will occur. Excess film thickness may lead to air entrapment or pinholing in the film. For Professional Use Only; Not Intended for Household Use.

MIXING AND APPLICATION INFORMATION

Mix Component "A" thoroughly before blending. (If 97-722 Accelerator is used, add it to the "A" Component and mix well prior to the addition of the "B" Component. Add up to 6 oz. of 97-722 per mixed gallon). Add Component "B" to Component "A" and mix well. A mechanical mixer is recommended.

Application Equipment: Changes in application equipment, pressures and/or tip sizes may be required depending on ambient temperatures and application conditions.

Conventional Spray: Fluid Nozzle: DeVilbiss MBC gun with 704 or 777 air cap with E or F tip and needle, or equivalent equipment. Atomization Pressure: 55-70 psi. Fluid Pressure: Can not specify dependent on numerous factors.

Airless Spray: Equipment capable of maintaining a minimum of 2500 psi at the tip without surge. 1500 psi minimum at the tip without surge. Tip size: 0.013" - 0.017" (0.331 - 0.443 mm) orifice. Spray equipment must be handled with due care and in accordance with manufacturer's recommendation. High-pressure injection of coatings into the skin by airless equipment may cause serious injury.

MIXING AND APPLICATION INFORMATION (cont.)

Brush: High Quality Natural Bristle Brush

Roller: High Quality 3/8" nap roller cover with a solvent resistant core.

Thinning: Thinning not normally required. For 2.08 lbs./gal (250 g/L) VOC, thin up to 5% by volume with 97-739 Exempt Thinner. 97-735 can be added up to 5% by volume, for brush, roll or spray application where VOC regulations allow.

Permissible temperatures during application:

Material:	40 to 90°F	4 to 32°C
Ambient:	40 to 100°F	4 to 38°C
Substrate:	40 to 130°F	4 to 54°C

SAFETY

Proper safety procedures should be followed at all times while handling this product. Explosion-proof equipment must be used when coating with these materials in confined areas. Keep containers closed and away from heat, sparks, and flames when not in use. USE WITH ADEQUATE VENTILATION. KEEP OUT OF REACH OF CHILDREN. Read all label and Material Safety Data Sheet for important health/safety information prior to use. MSDS are available through our website www.ppghpc.com or by calling 1-800-441-9695.

PPG Industries, Inc.
Architectural Coatings
One PPG Place
Pittsburgh, PA 15272
www.ppghpc.com

Technical Services
1-800-441-9695
1-888-807-5123 fax

Architect/Specifier:
1-800-PPG-IDEA

PPG Architectural Finishes
400 S. 13th Street
Louisville, KY 40203

PPG Canada, Inc.
Architectural Coatings
4 Kenview Blvd
Brampton, ON L6T 5E4

G10 6/2007
(Supersedes 10/2006)

Figure B-2
Ponderosa Paint Company, Inc., Enviro-Clad 2600 DTM/Urethane

PONDEROSA Protective Coatings

TECHNICAL BULLETIN

2600 SERIES DTM URETHANE MASTIC

TYPE: Aliphatic Acrylic Polyurethane Mastic

INTENDED USE: A rust preventative coating for mobile equipment, tankage substrates and structural steel.

FOR INDUSTRIAL USE ONLY

CHEMICAL RESISTANCE: Resistance to dry heat up to 150° F depending on color. Excellent resistance to weather, moisture, oil spills, and petroleum. Excellent resistance to solvents and chemical fumes.

SURFACE PREPARATION: Dependent on coating use. Refer to SURFACE PREPARATION Section.

APPLICATION: Apply by brush, roller, air assisted airless, HVLP, or conventional spray (where local regulations permit).

COLORS: Standard shop colors. Custom matches available upon request.

RECOMMENDED FILM THICKNESS: Up to 10.0 mils DFT

FILM THICKNESS PER COAT

SPRAY: 3 to 5 mils DFT

BRUSH OR ROLLER: 3 to 5 mils DFT.

THEORETICAL COVERAGE at 1 mil: 1574 sq. ft. per gallon, depending on color. The actual coverage will be less, depending on application technique, job conditions, and type of surface to be coated.

DRYING TIMES at 77°F (25°C):

Between coats: 70 minutes max. **Tack Free:** 3½ hours **Dust Free:** 5 hours
Tape: 7 hours **Print Free:** 8 hours **Force Dry at 140°F:** 4 hours after tack free.

CURING TIME: Cures in room temperature in about 7 days. Can be accelerated with PPC 's Liquid Lightening if desired.

Figure B-2 (continued)
Ponderosa Paint Company, Inc., Enviro-Clad 2600 DTM/Urethane

OVERCOATING TIME

MINIMUM: 24 hours

MAXIMUM: De-gloss and recoat. No special preparation is necessary.

PHYSICAL SPECIFICATIONS

PIGMENTS: Chemical resistant.

SOLIDS: Average of 98% by wt. and 96% by volume, depending on color.

POT LIFE (at 77°F): 45 minutes at 77°F (25°C) when catalyzed. Avoid moisture contamination.

SHELF LIFE: 24 months without catalyst. Watch for separation in extreme heat and cold.

SHIPPING WEIGHT (approximate due to color, fill level, pigment):
2600: Gallon – 9.15 lbs.
Catalyst: ½ gallon –4.15 lbs.

MIXING RATIO: 1 parts 2600 to 0.6 parts 2600 catalyst.

GLOSS: Super High Gloss

AREA OF USAGE

Recommended for tankage steel, trailer, fleet, and OEM. Recommended for areas where good chemical and/or weathering resistance is desired.

CHEMICAL RESISTANCE

• Water • Salt • Acids • Alkalis • Solvents •

NOTE: Although 2600 SERIES exhibits resistance to the above environments, this list is not meant to imply an express guarantee in actual service. It is recommended that the user contact Ponderosa Paint Company for specific recommendations when severe exposure is expected.

THINNERS

No thinning is required.

SPRAY APPLICATION: No thinning is required for most spray applications. If necessary, thin 11% by volume with PPC's Envirosol. Envirosol is a zero VOC reducer. Envirosol T-601 slow, T-602 medium, T-603 fast. (Note: always thin after adding catalyst.)

BRUSH OR ROLLER APPLICATION: Usually, no thinning necessary.

SURFACE PREPARATION

STEEL: Apply urethane over clean, oil and moisture free substrate. Before hand tool or power tool cleaning, visible deposits of oil, grease, or other materials that may interfere with coating adhesion shall be removed in accordance with SSPC-SP 1. Use either hand tool cleaning (SSPC-SP 2) or power tool cleaning (SSPC-SP 3) methods to remove loose mill scale, loose rust, loose paint and other loose detrimental foreign matter. After cleaning remove dirt, dust or similar contaminants from the surface by brushing, blowing off with clean air, or vacuum cleaning. Treat already painted surfaces as a primed surface.

CONCRETE: Concrete must be properly cleaned and primed, depending on surface use and condition. Contact Ponderosa Paint Company for specific recommendations.

Figure B-2 (continued)
Ponderosa Paint Company, Inc., Enviro-Clad 2600 DTM/Urethane

EQUIPMENT

SPRAY APPLICATION

1. All spray equipment should be thoroughly cleaned and the hose, in particular, should be free of old paint film and other contaminants.

2. Air Pressure:

HVLP	10 psi at the air cap
Conventional	45-55 psi at the gun
Air-Assisted HVLP	10 psi at the gun

Gun Setup:
1.4-1.7 mm or equivalent

3. When air-assisted airless spray equipment is used, the recommended liquid pressure is 2100 to 3300 psi with a tip size from .011" to .015".

ROLLER APPLICATION
Lambskin $^{3}/_{8}$" nap or Mohair $^{1}/_{4}$" nap

BRUSH APPLICATION
Quality China bristle brush.

READ THIS NOTICE

SAFETY AND MISCELLANEOUS EQUIPMENT

1. CATALYST WARNING! REACTS VIOLENTLY WITH COMMON MATERIALS INCLUDING WATER, ALCOHOLS, BASES AND AMINES. EYE IRRITANT. TOXIC IF INHALED. POSSIBLE SENSITIZER. Skin contact may aggravate existing skin disease. Eye and skin irritant. May be harmful if absorbed through the skin. May cause allergic reaction. May be harmful if inhaled. May cause shortness of breath, headache, nausea, vomiting, and respiratory tract irritation. May be harmful if swallowed.

2. INDIVIDUALS WITH LUNG OR BREATHING PROBLEMS OR PRIOR REACTION TO ISOCYANATES MUST NOT BE EXPOSED TO VAPOR OR SPRAY MIST. Wear an appropriate, properly fitted respirator (NIOSH approved) during application unless air monitoring demonstrates vapor or spray/mist levels are below applicable limits. An airline respirator (NIOSH approved) is required in work environments where isocyanate airborne concentrations are expected to exhibit considerable and sudden variations such as in spray type application. Follow respirator manufacturer's directions for respirator use. Do not get in eyes and use proper hygiene.

3. **CAUTION**- Read and follow all caution statements on this product technical bulletin, material safety data sheet and container label for this product.

MIXING

2600 series urethane enamel comes in a two-component package. The coating and the curing agent, 2600 Catalyst, are mixed at a 1: 0.6 ratio. Combine full containers for correct mix ratio. If thinning, add up to three cups of Envirosol. PPC's Envirosol is a zero VOC reducer. 2600 is an almost 100% solids product and needs to be mixed thoroughly to insure a good reaction.

NOTE: Always thin after adding catalyst.

APPLICATION PROCEDURE

1) Surface should be dry and clean. Free of dirt, grease, old loose scaling paint and anything that might interfere with adhesion. The surface preparation method selected will depend on the required degree of cleanliness defined by SSPC specifications. For surfaces that are pitted or scratched, a primer is recommended to achieve a smooth, more uniform appearance. We suggest either PPC's 7600, an epoxy primer, or PPC's 7500, an organic zinc primer.

Figure B-2 (continued)
Ponderosa Paint Company, Inc., Enviro-Clad 2600 DTM/Urethane

2) In order to assure that the same color is achieved consistently, make sure to stir well before using. If any pigment settling is evident, break it loose with a stirring stick and continue to mix until the product is consistent.

3) Once desired color has been achieved, the coating is ready for use. For roller application spread the product by rolling back and forth using a "W" pattern until the product is evenly distributed. Then back roll the section.

4) If spraying HVLP air atomizing spray equipment is recommended for application. A fluid pressure of 3-15 psi and atomizing gauge pressure of 45-65 psi are recommended.

5) When the part is completely coated and no more parts are to be finished, clean up all equipment that has been used with gun wash solvent. This material has a 1-hour pot life after mixing. Any unused paint and all mixing and application equipment must be flushed and cleaned within 15 minutes after mixing or use.

6) Refer to appropriate Material Safety Data Sheets and applicable local, state and federal laws for handling and disposal questions.

INSPECTION

Degree of surface preparation and film thickness shall conform to appropriate specifications outlined in SURFACE PREPARATION and RECOMMENDED FILM THICKNESS sections.

Figure B-3
ICI Devoe Devthane High Performance Coatings

DEVOE HIGH PERFORMANCE COATINGS

DEVTHANE® 359H

DTM High Build Gloss Aliphatic Urethane Mastic

Cat. # 359FXXXX/379C0910

PRODUCT DESCRIPTION

Generic: Acrylic Aliphatic Urethane

General Description: A high build, low VOC, high performance, chemically-cured aliphatic urethane gloss enamel for use in areas where maximum gloss & color retention are required.

Typical Uses: For use on properly prepared steel, concrete or steel floors, masonry, drywall, plaster, metal, concrete block, galvanized, aluminum, poured concrete, and glazed brick. Ideal for use on exterior or interior structural steel, piping, metal buildings, control cabinetry, conveyors, pumps, storage tanks, motors, machinery, and transportation vehicles. Can also be used in the hard service areas of food processing plants, dairies, schools, restaurants, hospitals, correctional facilities, factories, stadiums, arenas, and amusement parks.

FEATURES

Advantages:

- Excellent gloss and color retention
- Excellent abrasion and chemical resistance
- VOC less than 250 g/L
- Easily applied by brush, roller or spray
- Wide color selection, including safety colors
- Excellent resistance to marring, chipping, and scratching
- High Build
- Excellent application properties
- May be used direct to metal
- Ready mix colors contain no organic HAPS

Limitations of Use: Color may change as temperature approaches 250°F (121°C) limit, but the film will remain intact.

SPECIFICATION DATA

Color: Available in white, black and a full range of custom colors
Finish: High Gloss
Reduction Solvent: T-9 for spray, T-17 for brush or roller
Clean-up Solvent: T-9 Thinner
Weight/Gallon: 10.2 lbs./gal. (1.23 kg/L) – varies with color
VOC (EPA 24)**:** 1.91 lbs./gal. (229 g/L) – varies with color
Solids By Volume (ASTM 2697-7 days)**:** 72% ± 2%
Theoretical Coverage at 1.0 Mil (25 microns) **Dry:** 1116 sq. ft., (27.3 m^2/L)
Recommended Film Thickness: 4.0-6.0 mils (100-150 microns) dry – 5.8-8.6 mils (145-216 microns) wet. Direct to metal application requires a dry film thickness of 5-6 mils (125-150 microns)
Systems: Please consult the appropriate system guide, the particular job specification or your ICI Paints Representative for proper systems using this product. Systems must be selected considering the particular environment involved.
Minimum Dry Time (ASTM D 1640)**:** 4 mils (200 microns) DFT

Substrate Temperature	70°F (21°C)
Minimum Recoat	6 Hours
Dry Hard	24 Hours
Maximum Recoat	
Self	2 Weeks

Ventilation, film thickness, humidity, thinning, and other factors can influence the rate of dry.
Warning: The above table provides general guidelines only. Always consult your ICI Paints Representative for appropriate recoat windows since the maximum aged recoat time of this product may be significantly shortened or lengthened by a variety of conditions, including, but not limited to humidity, surface temperature, and the use of additives or thinners. The use of accelerators or force curing may shorten the aged recoat of individual coatings. The above recoat windows may not apply if recoating with a product other than those listed above. If the maximum aged recoat window is exceeded, please consult your ICI Paints Representative for appropriate recommendations to enhance adhesion. Failure to observe these precautions may result in intercoat delamination.
Shelf Life: Over 12 months at 77°F (25°C) – unopened
Mix Ratio By Volume: 4 (base): 1 (converter) – see mixing instructions.
Induction: None
Pot Life: 3 hours @ 77°F (25°C) & 50% R.H.

PERFORMANCE DATA

Adhesion: (ASTM D 4541) – Excellent
Salt Spray Resistance: (ASTM B 117) – Excellent
Abrasion Resistance: (ASTM D 4060) – Excellent
Humidity Resistance: (ASTM D 2247) – Excellent
Service Temperature Limits: 250°F (121°C) dry
Hardness: (ASTM D 3363), 7 day cure @ 77°F (25°C) – HB-F

Chemical Resistance: (ASTM D 1308 – 24 hr. contact) Excellent. Resists splash and spillage of alkalis, salts, moisture, oils, greases, foodstuffs and detergents.
Stain Resistance: (ASTM D 1308 – 1 week contact) Excellent. Resists stains such as crayon, lipstick, coffee, soil medium, shoe polish, grape juice, ink pen, marker, and spray paint.

DANGER! FLAMMABLE. HARMFUL OR FATAL IF SWALLOWED. Read label and Material Safety Data Sheet Prior to Use. See other cautions on last page. DSF3-0696

09800

9 FINISHES SPECIAL COATINGS (9800)
DEVOE COATINGS

Figure B-3 (continued)
ICI Devoe Devthane High Performance Coatings

Back Page: 359FXXXX/379C0910

GENERAL SURFACE PREPARATION

All surfaces must be sound, clean, dry, and free of oil, grease, mildew, form release agents, curing compounds, laitance, and other foreign matter. To insure the best appearance, the primer or undercoat should be smooth and free of any surface defects such as runs, dry spray or heavy orange peel. **Use only VOC compliant products for California.**

New Surfaces: Steel –For direct to steel application, abrasive blast to near- white metal surface cleanliness in accordance with SSPC-SP-10 or ISO-Sa2 1/2. Blast profile on steel should be 1.5 to 2.5 mils (38-63 microns) in depth and be of a sharp, jagged nature as opposed to a "peen" pattern (from shot blasting) or clean and prime with DEVRAN® 224HS, BAR-RUST® 231, BAR-RUST 235 or BAR-RUST 233H Epoxy. **Concrete Block** – Fill with DEVRAN 224HS, BAR-RUST 235, BAR-RUST 233H Epoxy, TRU-GLAZE-WB™ 4015 or BLOXFIL® 4000 block fillers. **Fiberglass** – Solvent wipe, scuff sand and solvent wipe again. Prime with DEVRAN 201. **Concrete Floors, Poured Concrete** – Cure at least 30 days. Acid etch or abrasive blast slick, glazed concrete or concrete with laitance. Prime with DEVRAN 224HS, BAR- RUST 235 or BAR-RUST 233H or use PRE-PRIME™ 167 Penetrating Sealer. **Drywall** –Prime with a premium acrylic latex vapor barrier primer-

Galvanized Steel and Aluminum –Remove dirt and oils by solvent cleaning or with DEVPREP® 88 Cleaner followed by a thorough water rinsing. Prime with DEVRAN 203 epoxy primer. For direct to metal use, brush-off blast in accordance with SSPC-SP-7 to create a surface profile.

Previously Painted Surfaces: Remove loose and peeling paint. Scuff sand glossy areas. Old coatings should be tested for lifting and bleeding. If they lift or bleed, remove them. Prime bare areas with a primer specified under **New Surfaces**.

WARNING! If you scrape, sand, or remove old paint, you may release lead dust. LEAD IS TOXIC. EXPOSURE TO LEAD DUST CAN CAUSE SERIOUS ILLNESS, SUCH AS BRAIN DAMAGE, ESPECIALLY IN CHILDREN. PREGNANT WOMEN SHOULD ALSO AVOID EXPOSURE. Wear a NIOSH approved respirator to control lead exposure. Clean up carefully with a HEPA vacuum and a wet mop. Before you start, find out how to protect yourself and your family by contacting the National Lead Information Hotline at 1-800-424-LEAD or log on to www.epa.gov/lead.

DIRECTIONS FOR USE

Tinting: Tint the appropriate base with CHROMA-CHEM* 844 colorants. (Do not use water based or other colorants.) Add colorants to only the base portion. Mix thoroughly before adding the converter portion. When using DEVTHANE® 359H enamel direct to metal, best results are obtained using ready mixed colors.

Thinning: Do not thin in California or other localities where VOC limit is 250 g/L. Where local regulations permit a VOC limit equal to or greater than 263 g/L, product may be thinned with up to 5% (by volume of the mixed material) of T-9 solvent. Small amounts (5% or less) of T-17 thinner will improve roller or brush applications.

Mixing: DEVTHANE 359H enamel is a two-component product supplied in 5 gallon or 1 gallon kits which contain the proper ratio of ingredients. The entire contents of each container must be mixed together. It is important that all mixing equipment is free of moisture and that moisture does not contaminate the coating. Mix the base portion to obtain a smooth, homogeneous condition. After mixing the base portion, add the converter slowly with continued agitation. Mix thoroughly. The pot life of the mixed material is 3 hours at 77°(25°C). Higher temperatures will reduce working life of the coating; lower temperatures will increase it. Avoid storing or placing containers in direct sunlight.

Application: Apply by airless spray, air spray, roller or brush. For airless spray, any air, electric, or gas operated airless sprayer capable of 3,000 psi (207 bars) and able to support a .015" to .019" tip sizes can be used. Multiple guns and long fluid lines require pumps with adequate capacity. For air spray application, use a professional grade gun, "E" or "D" Tip and 704 air cap or equivalent. Adjust fluid and air pressure to get a good spray pattern.

Note: Be sure all spray equipment and fluid lines are clean, and free of water or non-compatible solvents. For brush application, use good quality, dry, clean brushes. For roller application, use short nap, new rollers. Do not apply over wet surfaces or under very humid conditions where condensation or fog could settle on the coating during the cure process. Brushing and rolling may require multiple coats to achieve correct film thickness and/or hiding.

Spreading Rate: Apply at 186-279 sq. ft. per gallon (4.6-6.8 m²/L) depending on surface texture and porosity. Make allowance for any losses due to overspray or surface irregularities.

Dry Time (ASTM D 1640)**:** At 70°F (21°C) & 50% R.H., dries to recoat in 6 hours and dries hard in 24 hours.

Clean-up: Use T-9 thinner.

Cure Acceleration: Urethane catalyst 070A0000 may be used to accelerate cure at or below 40°F (5°C). The addition of one or two ounces per gallon will decrease the dry hard time approximately one-third to one-half respectively at 40°F (5°C). The pot life will be reduced one-half to three-fourths.

PRECAUTIONS

DANGER! FLAMMABLE LIQUID AND VAPOR. HARMFUL OR FATAL IF SWALLOWED. ASPIRATION HAZARD - CAN ENTER LUNGS AND CAUSE DAMAGE. HARMFUL IF INHALED. MAY CAUSE CENTRAL NERVOUS SYSTEM EFFECTS, INCLUDING DIZZINESS, HEADACHE OR NAUSEA. CAUSES EYE, SKIN AND RESPIRATORY TRACT IRRITATION. MAY CAUSE ALLERGIC SKIN AND RESPIRATORY REACTION. OVEREXPOSURE MAY CAUSE BLOOD, LIVER, KIDNEY DAMAGE. USE ONLY WITH ADEQUATE VENTILATION. KEEP OUT OF THE REACH OF CHILDREN. NOTICE: Products in this series contain solvents. Reports have associated repeated and prolonged occupational overexposure to solvents with permanent brain and nervous system damage. Intentional misuse by deliberately concentrating and inhaling the contents may be harmful or fatal. For emergency information call (800) 545-2643. **Note: These warnings encompass the product series. Prior to use, read and follow product-specific MSDS and label information.** Keep away from heat, sparks and flame. **Do not** smoke. Vapors may ignite. Extinguish all flames, burners, stoves, heaters and pilot lights and disconnect all electrical motors and appliances before use and until all vapors are gone. Prevent build-up of vapors by opening all windows and doors to achieve cross-ventilation. If sanding is done, wear a dust mask to avoid breathing of sanding dust. Do not breathe vapors or spray mist. Ensure fresh air entry during application and drying. Avoid contact with eyes and skin. If you experience eye watering, headaches, or dizziness, leave the area. If properly used, a respirator may offer additional protection. Obtain professional advice before using. Close container after each use. **FIRST AID**: For skin contact, wash thoroughly with soap and water. If any product remains, gently rub with petroleum jelly, vegetable or mineral/baby oil then wash again with soap and water. Repeat as needed. Remove contaminated clothing. For eye contact, flush immediately with plenty of water for at least 15 minutes. **Get medical attention**. If swallowed, **get medical attention immediately**. If inhalation causes discomfort, remove to fresh air. If discomfort persists or breathing difficulty occurs, get medical attention. **KEEP FROM FREEZING.**

DS174-1005

SHIPPING

Flash Point: 80°F (27°C)

Packaging:

1 gallon kit (3.785L)	5 gallon kit (18.925L)
0.80 gallon base	4.00 gallon base
0.20 gallon converter	1.00 gallon converter

Shipping Weight: 4 - 1 gallon kits - 60 lbs. (27.2kg)
5 gallon kit - 66 lbs. (29.9 kg)

359H (05/07)
Ad Stock #67044A

*CHROMA-CHEM is a Registered Trademark of Degussa GmbH.

DEVOE HIGH PERFORMANCE COATINGS
Strongsville, Ohio U.S.A.
800-654-2616
www.devoecoatings.com

Figure B-3 (continued)
ICI Devoe Devthane High Performance Coatings

DEVOE HIGH PERFORMANCE COATINGS

DEVTHANE® 379H

Aliphatic Urethane Gloss Enamel

Cat. # 379FXXXX/379C0910

9 FINISHES SPECIAL COATINGS (9800)

DEVOE COATINGS

PRODUCT DESCRIPTION

Generic: Aliphatic Acrylic Urethane

General Description: A high performance, low VOC two component chemically-cured aliphatic urethane gloss enamel for use in areas where maximum gloss & color retention are required.

Typical Uses: For use on properly prepared and primed steel, concrete or steel floors, masonry, drywall, plaster, metal, concrete block, galvanized aluminum, poured concrete, and glazed brick. Ideal for use on exterior or interior structural steel, piping, metal buildings, control cabinetry, conveyors, pumps, storage tank exteriors, motors, machinery, and transportation vehicles. Can also be used in the hard service areas of food processing plants, dairies, schools, restaurants, hospitals, correctional facilities, factories, stadiums, arenas, and amusement parks.

FEATURES

Advantages:
- Exceptional gloss and color retention
- Excellent abrasion and chemical resistance
- Higher solids and higher film build than typical urethane finishes
- VOC< 100 g/L (TBAC Exempt)
- Easily applied by brush, roller or spray
- Wide color selection, including safety colors
- Excellent resistance to marring, chipping, and scratching
- Contains ultraviolet light stabilizer
- Meets SSPC Paint 36, Level 3

Graffiti Resistance: Excellent resistance to most graffiti materials such as spray paint, magic markers and lipstick. Contact your ICI Paints Representative for more information.

Limitations of Use: Color may change as temperature approaches 250°F (121°C) limit, but the film will remain intact.

SPECIFICATION DATA

Color: White (tintable), ready-mixed & custom colors
Finish: Gloss (90 units @ 60°)
Weight/Gallon: 11.2 lbs./gal. (1.34 kg/L) – varies with color
VOC (TBAC Exempt)**:** <100 g/L (0.83 lbs. / gal.)
VOC (TBAC Exempt)**:** <100 g/L (0.83 lbs. / gal.) when thinned with # 800 VOC Compliant Reducer
VOC (TBAC Non-Exempt) < 250 g/L (2.08 lbs./gal.) when thinned 5% with T-9 or T-17 Thinner
Solids By Volume: 69% ± 2%
Theoretical Coverage at 1.0 Mil (25 microns) Dry: 1222 sq. ft./gal. (27.5 m^2/L)
Recommended Film Thickness: 2.0-3.0 mils (50-75 microns) dry – 2.8-4.3 mils (70-105 microns) wet
Systems: Please consult the appropriate system guide, the particular job specification or your ICI Paints Representative for proper systems using this product. Systems must be selected considering the particular environment involved.
Minimum Dry Time (ASTM D 1640): 2 mils (50 microns) DFT

Substrate Temperature	40°F (4°C)	60°F (16°C)	80°F (27°C)	100°F (38°C)
Minimum Recoat	13Hours	10 Hours	6 Hours	4 Hours
Dry Hard	>32Hour	24 Hours	16 Hours	12 Hours
Maximum Recoat				
Self	2 Weeks	2 Weeks	2 Weeks	1 Week

Ventilation, film thickness, humidity, thinning, and other factors can influence the rate of dry.
Warning: The above table provides general guidelines only. Always consult your ICI Paints Representative for appropriate recoat windows since the maximum aged recoat time of this product may be significantly shortened or lengthened by a variety of conditions, including, but not limited to humidity, surface temperature, and the use of additives or thinners. The above recoat windows may not apply if recoating with a product other than those listed above. If the maximum aged recoat window is exceeded, please consult your ICI Paints Representative for appropriate recommendations to enhance adhesion. Failure to observe these precautions may result in intercoat delamination.
Shelf Life: Over 12 months at 77°F (25°C) – unopened.
Mix Ratio By Volume: 4 (base): 1 (converter) – see mixing instructions.
Induction: None - see mixing instructions.
Pot Life: 2.5 hours @ 77°F (25°C)

DEVOE HIGH PERFORMANCE COATINGS

DEVOE COATINGS

9 FINISHES SPECIAL COATINGS (9800)

PERFORMANCE DATA

Adhesion: (ASTM D 4541) - Excellent
Salt Spray Resistance: (ASTM B 117) - Excellent
Abrasion Resistance: (ASTM D 4060) - Excellent
Humidity Resistance: (ASTM D 4585) - Excellent
Service Temperature Limits: 250°F (121°C) dry
Hardness: (ASTM D 3363), 7 day cure @ 77°F (25°C) – 4H

Chemical Resistance: (ASTM D 1308 – 24 hour contact) resists splash and spillage of alkalis, salts, moisture, oils, greases, foodstuffs and detergents.

Stain Resistance: (ASTM D 1308 – 1 week contact) Excellent. Resists stains such as crayon, lipstick, coffee, soil medium, shoe polish, grape juice, ink pen, marker, and spray paint.

DANGER! FLAMMABLE. HARMFUL OR FATAL IF SWALLOWED. Read label and Material Safety Data Sheet Prior to Use. See other cautions on last page. DSF3-0696

09800

Figure B-3 (continued)
ICI Devoe Devthane High Performance Coatings

GENERAL SURFACE PREPARATION

All surfaces must be sound, clean, dry, and free of oil, grease, mildew, form release agents, laitance, and foreign matter. To insure the best appearance, the primer or undercoat should be smooth and free of any surface defects such as runs, dry spray or heavy orange peel. **Use only VOC compliant products in California.**

New Surfaces: Clean and prime with DEVRAN® 203, DEVRAN 223, DEVRAN 224HS, BAR-RUST® 231, BAR-RUST 231V, BAR-RUST 233H, BAR-RUST 233V, BAR-RUST 235H, or TRU-GLAZE-WB™ 4030 epoxy primers. **Concrete Block -** Fill with DEVRAN 224HS, BAR-RUST 231, BAR-RUST 231V, BAR-RUST 233V, BAR-RUST 235H, or BAR-RUST 233H primers, TRU-GLAZE-WB 4015 or BLOXFIL® 4000 block fillers. **Fiberglass -** Solvent wipe, scuff sand and solvent wipe again. Prime with BAR-RUST 235H epoxy primer. **Concrete Floors, Poured Concrete -** Cure at least 30 days. pH must be 10.0 or lower before painting. Acid etch or abrasive blast slick, glazed concrete or concrete with laitance. Prime with DEVRAN 224HS, BAR-RUST 231, BAR-RUST 231V, BAR-RUST 233H, BAR-RUST 235H, or TRU-GLAZE-WB 4030 epoxy primers, or use PRE-PRIME™ 167 Penetrating Sealer. **Drywall –** Prime with a premium acrylic latex vapor barrier primer-sealer. **Galvanized Steel and Aluminum -** Remove dirt and oils with DEVPREP® 88 cleaner or other suitable cleaner followed by a thorough water rinsing.

Prime with DEVRAN 203 or TRU-GLAZE-WB 4030 epoxy primers. Galvanized substrates must be test patched for adhesion prior to use due to the high variability of surface treatments. **Choice of primer depends on local VOC and air quality regulations.**

Shop Applied Coatings: For coatings applied in shop situations only, depending on the substrate, the following primers may also be used: DEVRAN 220S, and DEVRAN 261 QCS epoxy primers. Consult the product data sheets for these primers for the appropriate uses.

WARNING! If you scrape, sand, or remove old paint, you may release lead dust. LEAD IS TOXIC. EXPOSURE TO LEAD DUST CAN CAUSE SERIOUS ILLNESS, SUCH AS BRAIN DAMAGE, ESPECIALLY IN CHILDREN. PREGNANT WOMEN SHOULD ALSO AVOID EXPOSURE. Wear a NIOSH approved respirator to control lead exposure. Clean up carefully with a HEPA vacuum and a wet mop. Before you start, find out how to protect yourself and your family by contacting the National Lead Information Hotline at 1-800-424-LEAD or log on to www.epa.gov/lead.

DIRECTIONS FOR USE

Tinting: Tint the appropriate base with CHROMA-CHEM* 844 colorants. (Do not use water based or other colorants.) Add colorants to only the base portion. Mix thoroughly before adding the converter portion.

Thinning: For compliance to VOC regulations, thin as follows: South Coast Air Quality Management District (SCAQMD): Thinning is not required, however, if thinning is desired, add # 800 VOC Compliant Reducer at no more than 10% by volume. Read and follow all hazard and precautionary information found on labels, data sheets and MSDS's. California outside of SCAQMD: Thinning is not required, however, if thinning is desired, add T9 Thinner at no more than 5% by volume. Small amounts (5% or less) of T-17 thinner will improve roller and brush applications.

Mixing: DEVTHANE® 379H enamel is a two component product supplied in 5 gallon or 1 gallon kits which contain the proper ratio of ingredients. The entire contents of each container must be mixed together. It is important that all mixing equipment is free of moisture and that moisture does not contaminate the coating. Mix the base portion to obtain a smooth, homogeneous condition. After mixing the base portion, add the converter slowly with continued agitation. Mix thoroughly. The pot life of the mixed material is 3 hours at 77°(25°C). Higher temperatures will reduce working life of the coating; lower temperatures will increase it. Avoid storing or placing containers in direct sunlight.

Application: Apply by airless spray, air spray, roller or brush. For airless spray, any air, electric, or gas operated airless sprayer capable of 3,000 psi (207 bars) and able to support a .011" to .017" tip sizes can be used. Multiple guns and long fluid lines require pumps with adequate capacity. For air spray application, use a professional grade gun; a .070" or larger fluid tip. Adjust fluid and air pressure to get a good spray pattern.

Note: Be sure all spray equipment and fluid lines are clean, and free of water or solvents. For brush application, use good quality, dry, clean brushes. For roller application use new, short nap mohair rollers. Do not apply over wet surfaces or under very humid conditions where condensation or fog could settle on the coating during the cure process. Brushing and rolling may require multiple coats to achieve correct film thickness and/or hiding.

Spreading Rate: For maximum protection in corrosive areas, apply at 374 sq. ft. per gallon (9.2 m²/L) or 3.0 mils (75 microns) dry-4.3 mils (105 microns) wet. In mild to moderate exposures, apply at 561 sq. ft. per gallon (13.77 m²/L) or 2.0 mils (50 microns) dry-2.8 mils (70 microns) wet. Make allowance for any losses due to over spray or surface irregularities.

Dry Time (ASTM D 1640): At 70°F (21°C) & 50% R.H., dries to recoat in 6 hours and dries hard in 16 hours.

Clean Up: Use T-9 thinner, except in the South Coast Air Quality Management District use # 4267 Low VOC Cleaning Thinner or other solvent in compliance with local VOC and air quality regulations.

Cure Acceleration: DEVTHANE Cure Accelerator 070A0000 may be used to accelerate cure of this urethane at or below 40°F (5°C). The addition of one to two ounces per gallon of urethane (one to two containers per five gallons of urethane) will decrease the dry hard time approximately one-third to one-half respectively. The pot life will be reduced one-half to three-fourths.

Ultraviolet Light Stabilizer (UVA): DEVTHANE Ultraviolet Light Absorber 080A0000 is already contained in DEVTHANE 379H Aliphatic Urethane Gloss Finish. Additional Ultraviolet Light Absorber is not required or desired.

PRECAUTIONS

DANGER! FLAMMABLE LIQUID AND VAPOR. HARMFUL OR FATAL IF SWALLOWED. ASPIRATION HAZARD - CAN ENTER LUNGS AND CAUSE DAMAGE. HARMFUL IF INHALED. MAY CAUSE CENTRAL NERVOUS SYSTEM EFFECTS, INCLUDING DIZZINESS, HEADACHE OR NAUSEA. CAUSES EYE, SKIN AND RESPIRATORY TRACT IRRITATION. MAY CAUSE ALLERGIC SKIN AND RESPIRATORY REACTION. OVEREXPOSURE MAY CAUSE BLOOD, LIVER, KIDNEY DAMAGE. USE ONLY WITH ADEQUATE VENTILATION. KEEP OUT OF THE REACH OF CHILDREN. NOTICE: Products in this series contain solvents. Reports have associated repeated and prolonged occupational overexposure to solvents with permanent brain and nervous system damage. Intentional misuse by deliberately concentrating and inhaling the contents may be harmful or fatal. For emergency information call (800) 545-2643. **Note: These warnings encompass the product series. Prior to use, read and follow product-specific MSDS and label information.** Keep away from heat, sparks and flame. **Do not** smoke. Vapors may ignite. Extinguish all flames, burners, stoves, heaters and pilot lights and disconnect all electrical motors and appliances before use and until all vapors are gone. Prevent build-up of vapors by opening all windows and doors to achieve cross-ventilation. If sanding is done, wear a dust mask to avoid breathing of sanding dust. Do not breathe vapors or spray mist. Ensure fresh air entry during application and drying. Avoid contact with eyes and skin. If you experience eye watering, headaches, or dizziness, leave the area. If properly used, a respirator may offer additional protection. Obtain professional advice before using. Close container after each use. **FIRST AID**: For skin contact, wash thoroughly with soap and water. If any product remains, gently rub with petroleum jelly, vegetable or mineral/baby oil then wash again with soap and water. Repeat as needed. Remove contaminated clothing. For eye contact, flush immediately with plenty of water for at least 15 minutes. **Get medical attention**. If swallowed, **get medical attention immediately**. If inhalation causes discomfort, remove to fresh air. If discomfort persists or breathing difficulty occurs, get medical attention. **KEEP FROM FREEZING.**

DS174-1005

SHIPPING

Flash Point: 80°F (27°C)

Packaging:

1 gallon kit (3.785L)	5 gallon kit (18.925L)
0.80 gallon base	4.00 gallon base
0.20 gallon converter	1.00 gallon converter

Shipping Weight: 1 gallon kit - 16 lbs. (7.5 kg)
5 gallon kit - 59 lbs. (26.8 kg)

379H (05/07)
Ad Stock #67045B

*CHROMA-CHEM is a Registered Trademark of Degussa GmbH.

DEVOE HIGH PERFORMANCE COATINGS

Strongsville, Ohio U.S.A.
800-654-2616
www.devoecoatings.com

LIMITATION OF LIABILITY: To the best of our knowledge, the technical data contained herein are true and accurate at the date of issuance but are subject to change without prior notice. We guarantee our product to conform to the specifications contained therein. WE MAKE NO OTHER WARRANTY OR GUARANTEE OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING MERCHANTABILITY AND FITNESS FOR PARTICULAR PURPOSE. Liability, if any, is limited to replacement of the product or refund of the purchase price. LABOR OR COST OF LABOR AND OTHER CONSEQUENTIAL DAMAGES ARE HEREBY EXCLUDED.

Figure C-1
Modern Custom Fabrication SuperVault MH Series Protected Aboveground Storage Tanks

SUPERVAULT MH
Multi-Hazard Rated

INSULATED AND PROTECTED
ABOVEGROUND FUEL STORAGE TANKS

Cylindrical and Rectangular Styles

Owners Manual

SUPERVAULT MH

•Smart •Safe •Secure •Reusable
Fire after Fire, Bullet after Bullet, Impact after Impact

Figure C-1 (continued)
Modern Custom Fabrication SuperVault MH Series Protected Aboveground Storage Tanks

SUPERVAULT MH

LISTINGS

Figure C-1 (continued)
Modern Custom Fabrication SuperVault MH Series Protected Aboveground Storage Tanks

SuperVault MH

Multi-Hazard Rated Insulated and Protected Aboveground Fuel Storage Tanks

Cylindrical and Rectangular Styles

TESTING RESULTS

Tests Performed by Southwest Research Institute, San Antonio, Texas

NATIONAL STANDARDS REQUIRE DEMONSTRATED RESISTANCE TO HIGH INTENSITY LIQUID POOL FIRE EXPOSURE

	Actual Results		Pass/Fail Criteria					
	Initial Test	Retest	SwRI 95-03		UFC Std A-II-F-1		UL2085 Protected	
Starting Temperature	80	61	Initial Test	Retest	Initial Test	Retest	Initial Test	Retest
2 Hour Results								
○ Average Temp Rise (˚F)	134	139	260	260	260	*	800	*
○ Max. Absolute Temp. (˚F)	275	212	400	400	400	*	1080	*
4 Hour Results								
○ Average Temp Rise (˚F)	165	n/a	260	*	*	*	*	*
○ Max. Absolute Temp. (˚F)	323	n/a	400	*	*	*	*	*

A sample tank was placed in a 2000 ˚f blast furnace. Thermometers located throughout the tank measure the temperature rise.
* No requirements

HOSE STREAM RESISTANCE

SwRI STANDARDS 95-03 AND 93-01 AND UFC STANDARDS A-II-F-1 REQUIRE DEMONSTATION RESISTANCE TO HOSE STREAM IMPINGEMENT ON THE TEST TANK IMMEDIATELY AFTER CONCLUSION OF THE RATED FIRE EXPOSURE PERIOD.

For a 4 Hour Fire Rating the hose stream test is 5 minutes of a 45 PSI stream administered through a 1-1/8" fire nozzle. The pass/fail criteria is that the primary tank must remain leak tight after application of the hose stream to test tank.
Not only did the primary tank of the SuperVault MH remain leak tight but there was NO PENETRATION of the outer steel tank and NO LOSS of insulation.

PROJECTILE RESISTANCE

SwRI STANDARD 95-03 AND 93-01 AND UFC STANDARDS A-II-F-1 AND UL 2085 PROTECTED REQUIRE DEMONSTRATION RESISTANCE TO PROJECTILE PENETRATION OF THE PRIMARY TANK.

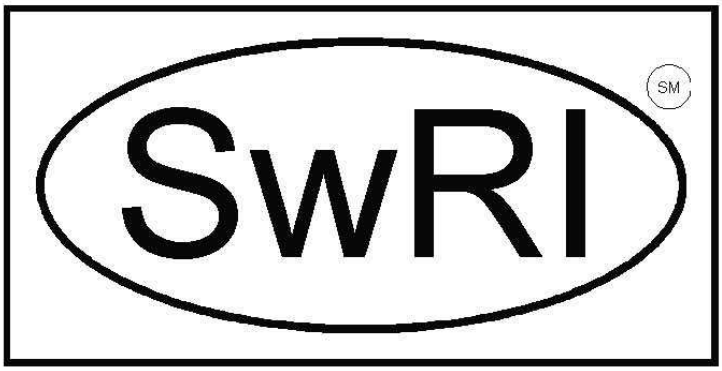
After conclusion of the hose stream test the SuperVault MH was subjected to 5 rounds of 150-grain, M-2 ammunition discharged from a 0.30 caliber rifle at a distance of 100 feet. The minimum muzzle velocity of the rounds was 2700 ft/sec. bullet resistance is the basis for Projectile Penetration Resistance rating. The SuperVault MH withstood all 5 rounds without penetration of the primary tank.

IMPACT RESISTANCE

SwRI STANDARD 95-03 AND 93-01 AND UFC STANDARD AII-F-1 AND UL 2085 PROTECTED REQUIRE DEMONSTRATION RESISTANCE TO HEAVY VEHICLE IMPACT WITHOUT PENETRATION OF THE PRIMARY TANK.

After anchoring in accordance with the manufacture's instructions the tank will be subject to an impact of 12,000 pounds traveling at 10 mph applied at 18" above the ground surface. The SuperVault MH withstood the impact without penetration of the primary tank.

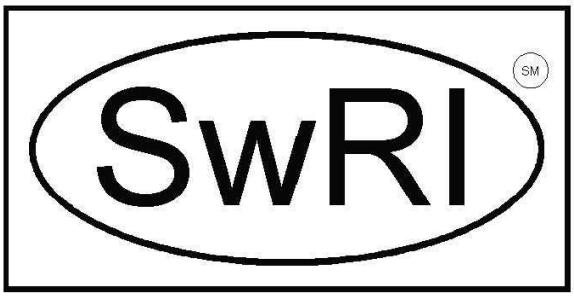
Figure C-1 (continued)
Modern Custom Fabrication SuperVault MH Series Protected Aboveground Storage Tanks



This mark on the product signifies that the product is listed by Southwest Research Institute.

The SuperVault MH is listed for compliance with SwRI Standards 95-03 and 03-01, Uniform Fire Code standard A-II-F-1 (formerly known as UFC 79-7) and UL 2085 Protected. The label on the tank bears the SwRI logo as evidence of listing and indicates compliance with the national standards listed above.

Figure C-1 (continued)
Modern Custom Fabrication SuperVault MH Series Protected Aboveground Storage Tanks



SuperVault MH

SwRI

Manufactured by Modern Custom Fabrication, Inc.
Fresno, CA

SwRI ID NO. 02098-01-02

Multi-Hazard Rated Protected Secondary Containment Aboveground Tank for Flammable and Combustible Liquids

This product has been evaluated for re-use after exposure to fire, puncture, or heavy-vehicle impact. Should any of these occur, contact the manufacturer.

LISTED BY:

Southwest Research Institutes ®
San Antonio, Texas

This product has been listed after passing a 4-hour Fire Exposure Test, a Hose Stream Resistance Test, a Projectile Penetration Test, a Heavy Vehicle Impact Test, an environmental exposure evaluation, and an additional 2-hour Fire Exposure Test using the same, fully-assembled test tank for all tests.

This tank complies with the requirements of SwRI Test Procedure 95-03, SwRI Test Procedure 93-01, UL 2085 and Section 20.9 of UL 1746 (1993) (Interstitial Communication Test), and is recognized listed product by Southwest Research Institute, San Antonio, Texas.

Serial No.

Manufactured under one or more of the following patents: United States patent Nos. 5,038,456; 5,082,138; 5,092,024; and 5,103,996. Manufactured under license from Super Technologies, LLC.

SuperVault MH tank Label for Fresno

Figure C-1 (continued)
Modern Custom Fabrication SuperVault MH Series Protected Aboveground Storage Tanks

SUPERVAULT MH

INSTALLATION

Figure C-1 (continued)
Modern Custom Fabrication SuperVault MH Series Protected Aboveground Storage Tanks

Installation Instructions

These instructions are for the stationary installation of the **SuperVault MH** aboveground tank used for the storage of petroleum products at atmospheric pressure.

No amount of written instruction, provided by manufacturers or regulatory agencies, will serve to convert an incompetent or under supervised mechanic into a competent craftsman. Installation of storage systems for flammable and combustible liquids is a unique field. The ability to recognize and react to unexpected, abnormal conditions that may occur during a tank installation requires experience as well as skill.

In addition to proper system design and operation, use of tank installers who possess both the experience and integrity to insist on doing the job right constitutes the greatest protection against ultimate tank system failure and liability exposure.

Your **SuperVault MH** must be installed in Accordance with all applicable federal, state and local environmental regulations and safety codes.

Location

Tank must meet local requirements. The enclosed "Clearance Requirements" diagram is based on the 2003 International Fire Code and is for reference only. Always check with your local authorities for their particular requirements before starting work.

Foundation

Tank foundation must comply with local Building Code regulations. Ask your local Fire Department or Building Department for recommendations. Modern Custom Fabrication Inc. recommends that at a minimum the concrete footing should be sufficiently above grade to prevent accumulation of debris, dirt and water around the tank supports.

The **SuperVault MH** tank supports and base plates meet the requirements of 2007 California Building Code. Expansion joint material that will not absorb water (asphalt impregnated fiberboard) should be placed between the tank supports and the concrete foundation.

Handling

Do not handle or install tank without having knowledge and experience in procedures involved with safe aboveground tank installation.

Before any attempt is made to move a tank, it should be established that hoisting equipment has sufficient capacity and reach to safely lift and lower the tank without dragging or dropping.

Lifting with nylon straps is preferred to prevent damage of the tank coating. The straps must be clean to avoid scratching the tank coating.

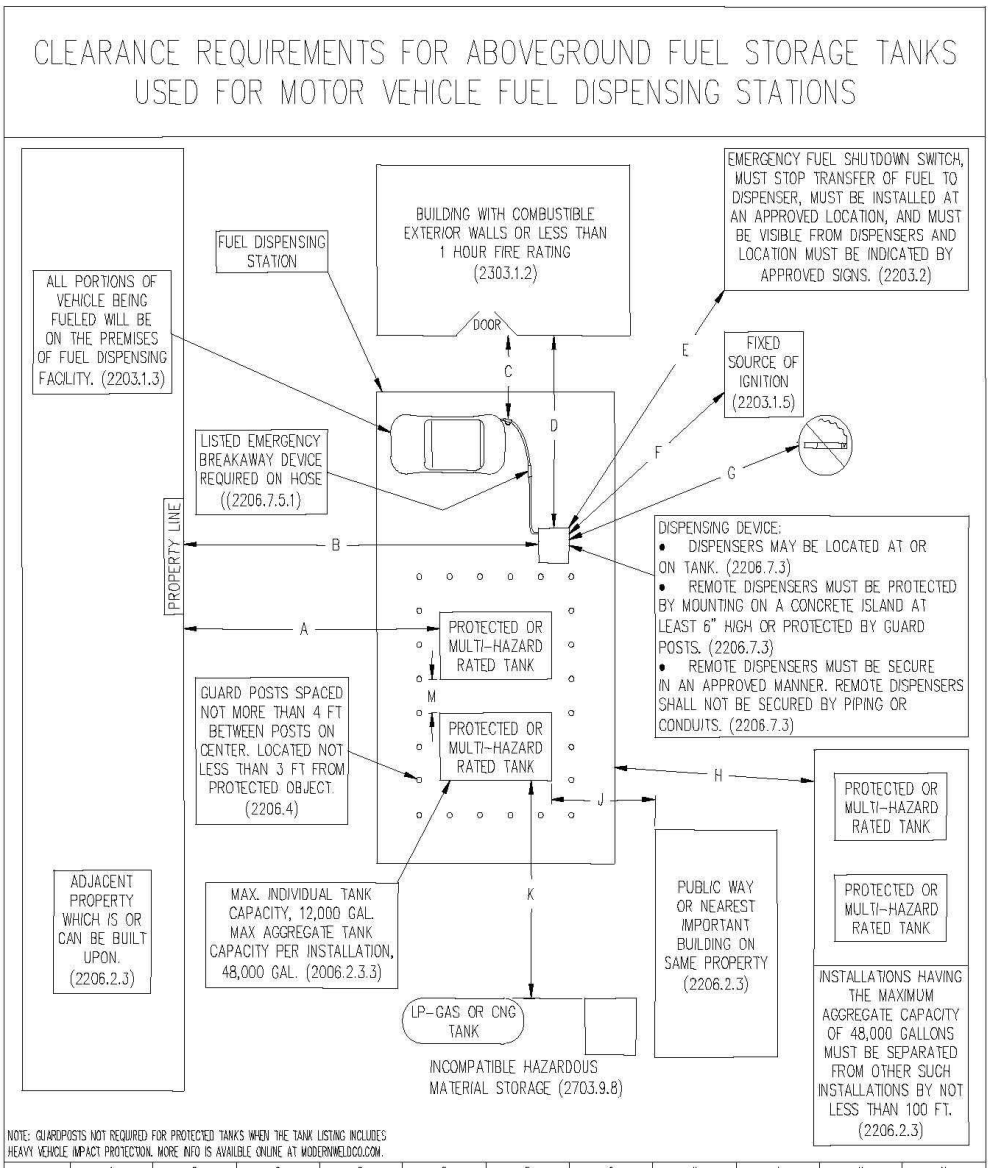
Do not push, drag or drop the SuperVault MH.

Do not handle or move the SuperVault MH unless it is empty.

Venting

All aboveground fuel storage tanks are required to have emergency vents to prevent the buildup of pressure. The emergency venting requirement for **SuperVault MH** tank must be provided by the use of emergency vent valve attached to a properly sized primary tank fitting. The tank manufacturer provides emergency venting for secondary tank by means of relief caps over the pour ports.

Figure C-1 (continued)
Modern Custom Fabrication SuperVault MH Series Protected Aboveground Storage Tanks



NOTE: GUARDPOSTS NOT REQUIRED FOR PROTECTED TANKS WHEN THE TANK LISTING INCLUDES HEAVY VEHICLE IMPACT PROTECTION. MORE INFO IS AVAILBLE ONLINE AT MODERNWELDCO.COM.

TANK CAPACITY (GALLONS)	A MIN. DISTANCE FROM LOT LINE LINE OF PROPERTY WHICH IS OR CAN BE BUILT UPON, INCLUDING THE SIDE OF A PUBLIC WAY. (2206.2.3)	B MIN. DISTANCE FROM LOT LINE LINE OF PROPERTY WHICH IS OR CAN BE BUILT UPON, INCLUDING THE SIDE OF A PUBLIC WAY. (2206.2.3)	C MIN. DISTANCE FROM BUILDING OPENINGS WHEN HOSE IS FULLY EXTENDED. (2203.1.4)	D MIN. DISTANCE FROM BUILDINGS HAVING COMBUSTIBLE EXTERIOR WALL SURFACE. (2203.1.2)	E EMERGENCY DISCONNECT SWITCH FOR EXTERIOR FUEL DISPENSERS. MIN./MAX DISTANCE FROM THE FUEL DISPENSERS. (2203.2)	F MIN. DISTANCE FROM FIXED SOURCES OF IGNITION. (2203.1.5)	G MIN. DISTANCE FROM SMOKING OR OPEN FLAMES IN THE AREA WHERE FUEL IS DISPENSED. (2205.4)	H MIN. DISTANCE FROM NEAREST INSTALLATION HAVING THE MAX. AGGREGATE CAP. (2006.2.3)	J MIN. DISTANCE FROM NEAREST SIDE OF ANY PUBLIC WAY OR IMPORTANT BUILDING ON SAME PROPERTY. (2206.2.3)	K MIN. DISTANCE FROM NEAREST INCOMPATIBLE HAZARDOUS MATERIAL STORAGE. (2703.9.8)	M MIN. DISTANCE BETWEEN TANKS. (2206.2.3)
6000 OR LESS	15 FT	10 FT	5 FT	10 FT	20 FT – 100 FT	20 FT	25 FT	100 FT	5 FT	20 FT	3 FT
OVER 6000	25 FT	10 FT	5 FT	10 FT	20 FT – 100 FT	20 FT	25 FT	100 FT	15 FT	20 FT	3 FT

Figure C-1 (continued)
Modern Custom Fabrication SuperVault MH Series Protected Aboveground Storage Tanks

SUPERVAULT MH

TESTING

Figure C-1 (continued)
Modern Custom Fabrication SuperVault MH Series Protected Aboveground Storage Tanks

TESTING

Each SuperVault MH is leak tested during the fabrication process by using 5 PSI of positive pressure internally and externally applying a leak detecting solution to all seams and joints. This is performed on both the primary and secondary tanks. Should the owner require additional field testing, the following procedure is offered to meet this requirement.

Warnings:

1. Do not air test a tank which has previously contained flammable or combustible liquids.
2. Air pressure used for this test must not exceed 5 PSI.

Figure C-1 (continued)
Modern Custom Fabrication SuperVault MH Series Protected Aboveground Storage Tanks

Procedure No. SV-P1

SUPERVAULT MH ABOVEGROUND PROTECTED FUEL STORAGE TANK

PRIMARY TANK FIELD TESTING

These tanks are thoroughly tested at the factory and certified to be leak free. Should the owner require additional field testing, the following procedure is offered to meet this requirement.

Modern Custom Fabrication Inc. is not responsible for any cost incurred relating to field testing.

PROCEDURE

1. Cap openings and install test equipment in the order listed below starting at compressor or air supply.
    a. Pressure reducing valve (5 PSI on outlet side)
    b. 0 to 5 PSI pressure gage
    c. 5 PSI pressure relief valve
    d. Shut-off valve
    e. 0 to 5 PSI pressure gage at tank
2. Slowly raise tank pressure to 4 PSI. CAUTION: Do not exceed 4 PSI.
3. Close shut-off valve when test pressure of 4 PSI is reached.
4. Leak test all pipe caps and test manifold with leak-detecting fluid to insure no loss of air pressure at these points.
5. Record time and pressure gage reading on a Test Log every 5 minutes. After 30 minutes have elapsed, record final pressure test and time.
6. No more than a 1% loss in test pressure over test period is allowed for tank to satisfactorily pass pressure test.

CERTIFICATION

The undersigned hereby certify that the pressure test was performed in strict conformance with this procedure for the SuperVault listed below.

Performed By: _____ (Company Name) _____ (Company Representative Signature)

_____ (Date of Test) _____ (Company Representative Name (Please Print))

Witnessed By: _____ (Regulating Authority) _____ (Regulator/Inspector Signature)

_____ (Regulator/Inspector Name (Please Print)) _____ (Time)

Tank Owner: _____ Customer P.O. No. _____

Installation Address: _____ Delivery Date _____

_____ Installation Date _____

_____ Tank Serial No. _____

Figure C-1 (continued)
Modern Custom Fabrication SuperVault MH Series Protected Aboveground Storage Tanks

SuperVault MH Test Log

Date of Test _____

Tank Serial No. _____

Test Start Time _____

		Record Pressure
4 PSI Reached	(Time) _____	(PSI) _____
1. 5 minute lapse	(Time) _____	(PSI) _____
2. 5 minute lapse	(Time) _____	(PSI) _____
3. 5 minute lapse	(Time) _____	(PSI) _____
4. 5 minute lapse	(Time) _____	(PSI) _____
5. 5 minute lapse	(Time) _____	(PSI) _____
6. 5 minute lapse	(Time) _____	(PSI) _____

No more than a 1% loss in test pressure over test period is allowed for tank to satisfactorily pass pressure test.

Figure C-1 (continued)
Modern Custom Fabrication SuperVault MH Series Protected Aboveground Storage Tanks

SUPERVAULT MH

MAINTENANCE

Figure C-1 (continued)
Modern Custom Fabrication SuperVault MH Series Protected Aboveground Storage Tanks

Maintenance

These maintenance procedures cover the tank only. Different applications and sizes of tanks create a variety of equipment configurations that would be impossible to cover in this section. Follow the equipment manufacturer's recommendation for maintenance schedules.

The following tank components should be inspected at least once a week:

Emergency and Normal Vents

Check the operation of the vents for free movement and no obstructions.

Spill Pan

Spill pan should be clean and free of obstructions. Drain valve must have free movement and be normally closed during operation of the tank.

Monitor Tube

Ensure the monitor tube is dry. This can be accomplished by sticking the tube with the gauge stick that is supplied with the tank. If the tank is equipped with a mechanical or electronic monitoring device, test it for proper operation.

Finish

Inspect surface of the tank for chips or corrosion. If found sand, clean and paint in accordance with the paint manufacturer recommendation.

Fuel

Impurities and moisture in fuel can damage the tank and equipment. Check with your fuel supplier for assistance with a clean fuel program and check for procedures to eliminate containments, including water from your fuel.

Figure C-1 (continued)
Modern Custom Fabrication SuperVault MH Series Protected Aboveground Storage Tanks

FUEL STORAGE TANK MONITORING LOG RECORD

DATE	GASOLINE	DIESEL	OPERATOR	COMMENTS
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				
26				
27				
28				
29				
30				
31				
Additional notes for this period:				

DIRECTIONS: WEEKLY

1) Tank operator to write in the date the tank leak monitor or indicator is checked.
2) Operator write in condition observed for each tank, i.e. dry or fuel present.
3) Operator to initial and comment on condition of each tank.
4) Report any liquid present in the monitor tube or alarm condition to your supervisor.
5) Tanks fitted with float actuated LEAK GAUGE have viewing indicator window. CLEAR indicates NO LEAKS, RED indicates LEAK. Check gauge periodically for proper operation.

Figure C-2
Steel Tank Institute Fireguard Protected Aboveground Storage Tanks

Steel Tank Institute

R942

LIGHTWEIGHT DOUBLE-WALL STEEL ABOVEGROUND STORAGE TANKS

INSTALLATION INSTRUCTIONS

FIREGUARD LIGHTWEIGHT DOUBLE WALL STEEL TANK INSTITUTE

FEBRUARY 2007

1.0 TANK SITE EVALUATION AND PREPARATION PRIOR TO INSTALLATION

1.1 The foundation must be designed to support the tank plus 100% of its contents when full. The foundation design shall also take into account the type of support that is being used and the point load associated with that support. The foundation may be constructed using concrete, asphalt, gravel or other stable material and must include provisions in its design to prevent tank movement. The foundation should include any provisions necessary for seismic design.
The foundation design must also include provision for draining surface water away from the tank.

1.2 For tank installations without cathodic corrosion protection, the tank should be grounded in accordance with applicable electrical and fire code standards.

1.3 Where the steel tank body is in contact with the earth, use a zinc grounding rod. Do not use a copper grounding rod.

1.4 Where the steel tank body is in contact with the earth or foundation, it should be protected from external corrosion. For external corrosion protection using cathodic corrosion protection, consult applicable standards (i.e., National Association of Corrosion Engineers) to provide the tank with appropriate protection from lightning without interference with the corrosion protection. Steel tanks in contact with the earth should not use copper grounding. Refer to STI R893-89, "Recommended Practice for External Corrosion Protection of Shop Fabricated Aboveground Storage Tank Floors."

1.5 Tanks located in areas subject to flooding must be protected against floatation.

1.6 Aboveground tanks should not be located above underground utilities or directly beneath overhead power lines.

1.7 The tank shall be protected from vandalism and accidental damage in accordance with all applicable codes, i.e., NFPA 30, NFPA 30A, UFC, etc. as well as local environmental regulations and safety codes. Consult local authorities before installing this tank.

2.0 TANK HANDLING

2.1 Do not handle or install the tank without having knowledge and experience in procedures involved with proper and safe installation of an aboveground tank used for storage of stable, flammable and combustible liquids.

2.2 Equipment for handling the tank shall be of adequate size to lift and position the tank. DO NOT DROP OR DRAG THE TANK.

2.3 Tanks shall be carefully handled using cables or chains of adequate length (with spreader bars, if necessary) and size. Attach to the tank using the lifting lugs provided. Care should be taken that the angle between the two cables, at the lift point, shall be no greater than 60 degrees.

2.4 DO NOT HANDLE OR MOVE THE TANK UNLESS IT IS EMPTY.

2.5 This is a stationary tank. Do not use this tank for transport of any product.

3.0 TESTING

3.1 General Requirements

3.1.1 An on-site air test of the tank may be required by local authorities to ensure no damage has occurred in shipping and handling. All testing shall be done as described below.

3.1.2 Vacuum monitored double wall tanks are shipped from the manufacturer with a vacuum drawn on the space between the walls. Read and record the vacuum pressure. If the vacuum gauge reading is less than 12 inches

Figure C-2 (continued)
Steel Tank Institute Fireguard Protected Aboveground Storage Tanks

Hg (40.5 kPa), contact the original tank manufacturer.

3.1.3 In lieu of the air pressure test described below, a vacuum may be applied to the interstice of a double-wall tank or to the interstice of a double-bottom tank. DO NOT APPLY A VACUUM TO THE PRIMARY TANK OF A DOUBLE-WALL TANK OR TO A SINGLE-WALL TANK. A vacuum of 7" to 10" Hg is to be applied to the interstice and held for at least 24 hours with no more than a 2" Hg vacuum loss allowed. If this vacuum cannot be held for 24 hours, then perform the air test procedure described below.

3.1.3.1 Caution must be taken in applying a vacuum to the interstice of a tank and the testing must be stopped if any deformation appears on the tank.

3.2 Air Pressure Test Procedure for Tanks

3.2.1 Remove emergency vents and cap openings to hold tank pressure as required.

NOTE: Use only calibrated air pressure gauges with a 0-15 psig (0-103 kPa) dial span. The relief valve must have a flow rate at the set pressure that is greater than the flow rate of the air supply line. The regulated air supply test pressure used for this test should be as follows:

a. **Horizontal cylindrical tanks** - Not less than 3 psig (20.7 kPa) nor more than 5 psig (34.5 kPa) . Set the pressure relief valve in the test air supply line at 5.5 psi (38 kPa).

b. **Vertical tanks**-Not less than 1½ psig (10.4 kPa) nor more than 3 psig (20.7 kPa). Set pressure relief valve in test air supply line at 3 psig (20.7 kPa).

c. **Rectangular tanks**-Not more than 3 psig (20.7 kPa). Set pressure relief valve in test air supply line at 3 psig (20.7 kPa).

CAUTION: Do not leave pressurized tank unattended while the pressure line/air line is connected. Do not stand in front of tank heads or fittings when pressurizing tank. Pressurizing of large tanks may result in the slight deformation of the top and bottom of vertical tanks, of the sides of rectangular tanks, and of the heads and ends of cylindrical tanks. Should deformation appear severe, immediately relieve the pressure.

3.2.2 Tank Pressurizing Procedure

3.2.2.1 The following air pressure testing does not apply to double-wall tanks equipped with interstitial vacuum monitoring systems. (In lieu of the air pressure test, the tank may be shipped from the factory with a vacuum in the tank interstice. Read and record the vacuum pressure. If the vacuum pressure gauge reading is less than 12 inches Hg (40.5 kPa), contact the tank manufacturer).

3.2.2.2 Install test piping as shown in Figure 2. Close valves A and B. Open valve C. Temporarily plug, cap or seal off remaining tank openings to hold pressure.

3.2.2.3 Connect the regulated test air supply line to test piping as shown in Figure 2.

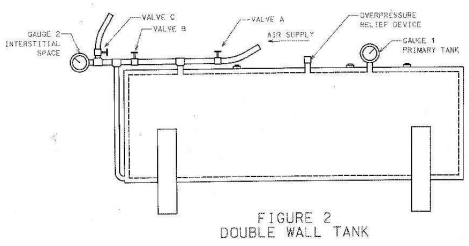


FIGURE 2
DOUBLE WALL TANK

3.2.2.4 Close valves B and C. Slowly open valve A to pressurize the primary tank. Pressure gauge 1 should indicate test air pressure given in Section 3.2.1 above.

3.2.2.5 Close valve A. Disconnect the regulated test air supply line from the test piping.

3.2.2.6 Monitor test pressure in the primary tank for 1 hour minimum. A steady drop in pressure reading for gauge 1 indicates there may be a leak in the primary tank. Check the fittings, the gauge, and then retest. If the problem persists, contact the tank manufacturer.

3.2.2.7 If no leaks are found, close valve C and slowly open valve B to pressurize the interstitial space between the double walls of the tank.

Figure C-2 (continued)
Steel Tank Institute Fireguard Protected Aboveground Storage Tanks

WARNING: Do not apply air pressure to the interstitial space between the walls of a double wall tank without air pressure in the primary tank. Do not apply air pressure to the interstitial space that is higher than the air pressure in the primary tank. Damage to the tank may result.
Pressure gauge 1 will indicate a slight drop in test pressure when valve B is opened, but should hold steady at the lower pressure. If the test pressure drops below the minimum requirements, close valve B, reconnect the air supply line and slowly open valve A to increase the pressure in the primary tank When the required pressure is indicated on gauge 1 close valve A, disconnect the test air supply line. Open valve B to equalize pressure in the primary tank and the interstitial space. Gauge 1 and gauge 2 should have the same pressure reading.

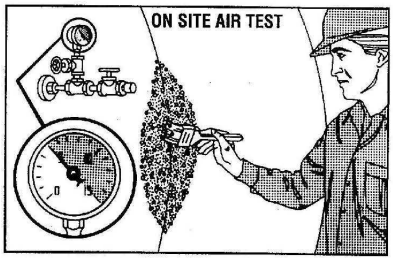
3.2.2.8 Close valve B. Hold the test pressure in the interstitial space for 1 hour minimum. A steady drop in pressure gauge 2 indicates there may be a leak in the interstitial space. Check the fittings, the gauges, and then retest. If the problem persists, contact the tank manufacturer.

3.2.2.9 Proceed to Section 3.2.3, "Detection of Leaks" below.

3.2.3 Detection of Leaks

3.2.3.1 Immediately apply the leak test solution to the tank exterior surfaces, welds, fittings, etc. Check for leaks. No leaks are allowed. If leaks are found, notify the tank manufacturer. If no leaks are found, testing of the tank is complete.

3.2.3.2 Open valve C, then slowly open valve B to release the test air pressure.



3.2.3.3 With the tank depressurized, remove the test piping, temporary plugs, caps and seals. Reinstall the emergency relief vents, etc. which were removed in Section 3.2.1 above. Emergency vents are required on both the primary tank and the secondary tank.
WARNING: Emergency relief vents must be operable to prevent causing tank failure by over-pressurization.

4.0 TANK PIPING AND ACCESSORIES

4.1 Install all permanent piping and fittings using compatible, non-hardening thread sealant material.

4.2 All unused tank openings must be properly sealed and tested to be liquid and vapor tight prior to putting the tank into service.

4.3 DO NOT WELD ON THE TANK, MODIFY OR PENETRATE THE TANK STRUCTURE IN ANY WAY WITHOUT THE EXPRESS WRITTEN PERMISSION OF THE TANK MANUFACTURER.

4.4 All tank accessories shall be installed as required per local codes. Anti-siphon devices, overfill shut-offs and alarms, vents gauges, emergency vents, etc. are common requirements for tanks storing motor fuels for the purpose of being dispensed into motor vehicles.

5.0 LABELING

5.1 Tanks shall be labeled in accordance with all applicable codes.

6.0 MAINTENANCE

6.1 The tank operator should perform periodic walk-around inspections to identify and repair areas of damage to the vessel or the coating itself and check for proper drainage around the tank area.

6.2 It is imperative that the tank exterior be inspected periodically to ensure that the integrity of the coating is maintained. The frequency of periodic repainting will be based upon environmental factors in the geographic area where the tank is located. Special consideration should be given to the selection of the paint, surface preparation and coating application. The coating selected should be suitable for use with the current coating, or the existing coating should be removed. The coating

Figure C-2 (continued)
Steel Tank Institute Fireguard Protected Aboveground Storage Tanks

selected should be of industrial quality.

6.3 Proper site preparation and maintenance are vital to ensure drainage of surface water. Should ground conditions change or settlement occur, take the appropriate steps to maintain proper drainage and prevent standing water near or under the tank area.

6.4 The primary tank shall be inspected monthly for the presence of water at the lowest possible points inside the primary tank. Remove any water found. Water and sediment in fuel can cause plugging of filters. Also, bacterial growth, originating from the fuel can cause corrosion of tanks and lines. For procedures on how to check for the presence of water and removal of water, refer to API Recommended Practice 1621, Appendix D and API Standard 2610. Another source of information is a report by the US Department of Energy Brookhaven National Laboratory, BNL 48406, which provides information on methods to test for and remove water, test for bacterial presence in fuel, tank cleaning and fuel additives.

6.5 This tank must be removed from service if damaged by fire exposure, other physical means or misuse.

6.6 Failure to adhere with these maintenance instructions may void your warranty.

6.7 Tank relocation requirements - often aboveground storage tanks are relocated. The following instructions are to be followed when this occurs: All steps are to be documented and the documentation is to be kept for the life of the tank.

6.7.1 The hazards associated with the cleaning, entry, inspection, testing, maintenance or other aspects of ASTs are significant. Safety considerations and controls should be established prior to undertaking physical activities associated with ASTs. Cleaning of tanks must be per state and local jurisdiction requirements.

6.7.2 Refer to the STI Standard SP001, "Standard for the Inspection of Aboveground Storage Tanks" for requirements concerning tank inspections. This SP001 Standard details requirements for inspections based on the tank installation and age. A tank must undergo the appropriate inspection prior to relocation.

6.7.3 In addition, the tank must be subjected to a pressure (or vacuum) test as detailed paragraph 3.2 above except an inert gas, such as nitrogen, should be used for tanks that have previously held fuel.

Disclaimer

These instructions are intended only as an aid to tank installers who are knowledgeable and experienced in aboveground tank installation. Compliance herewith does not necessarily meet the requirements of applicable federal, state and local laws, regulations and ordinances concerning tank installation. STI makes no warranties, express or implied, including but not limited to, any implied warranties of merchantability or fitness for a particular purpose, as a result of these installation instructions.